REMARKS

Applicant concurrently files herewith an an Excess Claim Fee Payment Letter and fee for four (4) excess independent claims.

Claims 1-21 and 39-47 are all the claims presently pending in the application. New claims 45-47 have been added to more completely define the invention.

Applicant gratefully acknowledges the Examiner's indication that claims 11, 13, and 36-44 would be allowable if rewritten in independent form. Allowable claims 36-38 have been canceled and their allowable limitations combined with independent claims 1, 18, and 19 respectively and allowable claims 39, 41, and 43 have been rewritten in independent form thus rendering moot the prior art rejections of claims 1-5, 7-10, 12, and 14-21.

Claims 1-17, 36 and 39-40 stand rejected under §112, second paragraph. This rejection is respectfully traversed in view of the amendments to the claims. Specifically, in independent claims 1 and 6, the words "*over a substrate*" have been deleted in line 2, and "*said substrate*" has been changed to be "*a substrate*" on line 6, respectively. Applicant notes that independent claim 6 was not rejected on prior art grounds and is thus in condition for immediate allowance.

Thus all of claims 1-21 and 39-44 are in condition for immediate allowance.

It is noted that the claims have been amended solely to more particularly point out Applicant's invention for the Examiner, and not for distinguishing over the prior art, narrowing the claim in view of the prior art, or for statutory requirements directed to patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

A further feature of the present invention, in a non-limiting embodiment (e.g., as defined by new claims 45-47), is that a passivation layer is grown in-situ such that subsequent oxidation of a metal is substantially prevented. Further, the in-situ growth of the passivation layer includes an ultra high vacuum chemical vapor deposition (UHV CVD) growth of metal -Si-N.

This feature is effective in preventing metal (e.g., in a non-limiting embodiment

Tungsten (W)) from being oxidized in the subsequent processing steps thus improving adhesion (e.g., see page 7, lines 15-24 and page 8, lines 1-6 of the specification).

Applicant notes that the prior art references are silent regarding such features. Specifically, as discussed in the Supplemental Amendment of March 30, 2003, Linn is much different from the present invention. That is in Linn, an ex-situ methodology is disclosed. Further, in Linn a metal is oxidized as a result of the contrasting methodology employed. Specifically, in Linn (e.g., see column 6, lines 55-62 and column 7, lines 3-35 of Linn) there is disclosed a method of bonding Tungsten (1000 Œ) on polysilicon (500 Œ) by placing a drop of oxidizing aqueous solution of HNO_3 and H_2O_2 solution on polysilicon. The drop is 20% by volume a 67% HNO_3 solution and 80% by volume a 30% H_2O_2 solution. Thereafter, heating occurs to 900âC in a 2- 6 hour-furnace cycle with an oxidizing ambient.

This reaction achieves tungsten silicide, and drives polysilicon to form silicon oxynitride, and a bonded backgate is achieved. The reactions are basically : $W + 2Si$ -----> WSi_2 $Si + HNO_3 + H_2O_2$ -----> $Si_xO_yN_z + H_2O + O_2$ $WSi_2 + HNO_3 + H_2O_2$ -----> $Si_xO_yN_z + W_aO_bN_c + \mathbf{H_2O + O_2}$.

Thus, Linn teaches an ex-situ method where a metal is oxidized and bubbles are formed which prevent complete adhesion causing films to buckle and peel. In Linn, the drop ($HNO_3 + H_2O_2$) is applied ex-situ to achieve bonding of tungsten and Si and forms water vapor and oxygen gases after annealing at 900âC for 2 to 6 hours. This water vapor and oxygen gas will break through the top Si, oxide, polysilicon (e.g., see Fig 5A) in the form of bubbles. Thus, Linn is completely different from the present invention.

With the above and other unique and unobvious aspects of the present invention, making substrates for double-gate devices with a metal back-gate can be performed including using wafer bonding and despite after the room-temperature joining step, a thermal treatment at 1100°C is used to enhance the bonding strength.

That is, even with chemical and physical incompatibility of layers, the stacked layers are not likely to disintegrate during the high temperature bonding anneal, and delamination will not occur at the interfaces.

Thus, the present invention resolves the above-mentioned and other problems of delamination between, for example, W and low temperature oxide (LTO) during bonding anneal by improving the adhesion between these two incompatible materials with several

innovative processes.

None of the cited references, either alone or in combination, teaches or suggests such a combination of features.

In view of the foregoing, Applicant submits that claims 1-21 and 39-44 (and new claims 45-47), all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0510.

Respectfully Submitted,

Date: 9/3/03

Sean M. McGinn, Esq.
Reg. No. 34,386

McGinn & Gibb, PLLC
8321 Old Courthouse Rd. Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254